

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1.-39. (Canceled).

40. (New, amended) An improved surface for the growth and attachment of cells comprising a biopolymer coated with ~~a high-quality~~, hydrogen free diamond-like carbon surface.

41. (New) The improved surface of claim 40, wherein the biopolymer is biodegradable.

42. (New) The improved surface of claim 40, wherein the biopolymer is in sheet form.

43. (New) The improved surface of claim 40, wherein the biopolymer is in micro particle form.

44. (New, withdrawn) A method of growing neurons in culture comprising the seeding and growth of neurons on a biopolymer coated with a high quality, hydrogen free diamond-like carbon surface.

45. (New, withdrawn) The method of claim 44, wherein the biopolymer is biodegradable.

46. (New, withdrawn) The method of claim 44, wherein the biopolymer is in sheet form.

47. (New, withdrawn) The method of claim 44, wherein the biopolymer is in micro particle form.

48. (New) The improved surface of claim 40, wherein the biopolymer has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF

conjugated with polycarbophyll, EGF conjugated with polycarbophyll, and heparin sulfate.

49. (New, withdrawn) A method of growing neurons in culture comprising the seeding and growth of neurons on a biopolymer made using the method of claim 48.

50. (New, withdrawn) An apparatus for detection of neural cell signals comprising:

a) a unit of biopolymer having embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophyll, EGF conjugated with polycarbophyll, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes;

b) an integrated circuit chip or charge coupled device having a means for said neural processes or dendrites to make an electrical connection;

c) a detector means for measuring the electrical signals from the neurons; and

d) a means for attaching said chip to a detector means.

51. (New, withdrawn) The apparatus of claim 50, wherein the biopolymer unit is self-contained.

52. (New, withdrawn) The apparatus of claim 50, wherein the biopolymer unit is semi-solid.

53. (New, withdrawn) The apparatus of claim 50, wherein the integrated circuit chip or charge coupled device has coated onto it during its synthesis, an attachment reagent comprising one or more of the following: Nerve Growth Factor or Diamond-Like-Carbon, to enhance the electrical contact between the neuronal processes or dendrites and the chip.

54. (New, withdrawn) A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal growth.

55. (New, withdrawn) The growth medium of claim 54, wherein the biopolymer is comprised of chitosan or sodium alginate.

56. (New, withdrawn) The growth medium of claim 55, wherein the biopolymer has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophyll, EGF conjugated with polycarbophyll, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes.

57. (New, withdrawn) The growth medium of claim 56, wherein the concentration of bFGF conjugated with polycarbophyll, or heparin sulfate is about 50 $\mu\text{g/mL}$, the concentration of NGF conjugated with polycarbophyll, or heparin sulfate is about 50 $\mu\text{g/mL}$, the concentration of laminin is about 500 $\mu\text{g/mL}$ and the concentration of RGDS is about 500 $\mu\text{g/mL}$.

58. (New, amended) A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal cell growth coated with Diamond-Like Carbon.

59. (New) The growth medium of claim 58, wherein the biopolymer is comprised of chitosan and/or sodium alginate.

60. (New, amended) The growth medium of claim 59, wherein the biopolymer has embedded or incorporated into it during its synthesis, an attachment

reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophyll, EGF conjugated with polycarbophyll, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted ~~into said unit~~ onto the growth medium at low density to proliferate and send out neural processes.

61. (New) The growth medium of claim 60, wherein said biopolymer is shaped into beads, sheets or micro-particles.

62. (New, withdrawn) A method of transplanting neurons to a recipient host comprising the seeding of the neurons of interest into the growth medium of claim 60, allowing the neurons to grow to sufficient density, and implantation of the neurons within the growth medium into said host.

63. (New, withdrawn) A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal growth which is coated with bovine corneal endothelial cell-extracellular matrix (BCE-ECM).

64. (New, withdrawn) A method for making the growth medium of claim 63, comprising:

- a) seeding onto said three dimensional growth medium at low density, a population of bovine corneal endothelial (BCE) cells in a culture media suitable for their growth;
- b) allowing the BCE cells to grow to confluence; and
- c) aspirating the media and treating the three dimensional growth medium with ammonium hydroxide for a sufficient period of time to remove the cells.

65. (New) A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is

capable of supporting neuronal growth which is coated with BCE-ECM and with Diamond-Like Carbon.

66. (New) The growth medium of claim 65, wherein the biopolymer is comprised of chitosan and/or sodium alginate.

67. (New, amended) The growth medium of claim 66, wherein said biopolymer has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophyll, EGF conjugated with polycarbophyll, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted ~~into said unit~~ onto the growth medium at low density to proliferate and send out neural processes.

68. (New) The growth medium of claim 67, wherein said biopolymer is shaped into beads, sheets or micro-particles.

69. (New, amended) A laboratory apparatus having a coating suitable for inducing the growth and attachment of cells, ~~comprising said the~~ apparatus having an inside and outside surface, wherein the inside surface is the surface in contact with cells and cellular media and the inside surface of said apparatus is coated with a film of Diamond-like-Carbon layered over a biopolymer coating.

70. (New) The apparatus of claim 69, selected from the group consisting of cell culture dishes, petri dishes, tissue culture flasks, plates, bottles, slides, filter chambers, slide chambers, roller bottles, harvesters and tubing.

71. (New, amended) laboratory apparatus having a coating suitable for inducing the growth and attachment of cells comprising ~~coating the~~ an inside surface in contact with cells and cellular media of said apparatus coated with a film of Diamond-like-Carbon layered over a biopolymer coating and at least one other coating.

72. (New, amended) The apparatus of claim 71, wherein the at least one other coating is an extracellular matrix.

73. (New) The apparatus of claim 72, wherein the coating is BCE-ECM.

74. (New, amended) A method of ~~coating~~ making a laboratory apparatus suitable for inducing the growth and attachment of cells, wherein the laboratory apparatus has an inside surface and an outside surface, and wherein the inside surface is in contact with cells and cellular media of said apparatus, the method comprising:

a) obtaining the apparatus;

b) applying to an inside surface of the apparatus a biopolymer coating; then

c) applying a film of Diamond-like-Carbon over the biopolymer coating.

75. (New, amended) The method of claim 74, further comprising ~~coating~~ applying to the inside surface of said apparatus ~~first with~~ after step b) at least one other coating, ~~such as BCE-ECM~~ and then ~~coating~~ applying to the inside surface of said apparatus a film of Diamond-like-Carbon.

76. (New) An apparatus made according to the method of claim 74.

77. (New) An apparatus made according to the method of claim 75.

78. (New, amended) An improved surface for the growth and attachment of cells comprising a synthetic biopolymer coated with ~~a high quality, hydrogen-free~~ Diamond-like-Carbon ~~surface~~.

79. (New, amended) The improved surface of claim 78, wherein the synthetic polymer is a biodegradable acrylic polymer ~~and its derivatives or copolymers such as polymethylmethacrylate, poly-N-isopropylacrylamide or poly-2-hydroxymethylmethacrylate, or a polyvinyl alcohol and its derivatives and copolymers.~~

80. (New) The improved surface of claim 78, wherein the synthetic biodegradable polymer is selected from the group consisting of: polymethylmethacrylate, poly-N-isopropylacrylamide or poly-2-hydroxymethylmethacrylate, or a polyvinyl alcohol and copolymers thereof.